

Amendments to the Specification

Specification page 4, lines 12-21, please replace the paragraph with the following replacement paragraph:

In the range finder using the conventional technique, a measured distance tends to have an error due to thermal expansion and thermal contraction caused by a temperature change (hereinafter the thermal expansion and thermal contraction caused by a temperature change will be referred to collectively as the "thermal expansion and contraction"). An error of the measured distance will be referred to as "measured distance error[[]].". The measured distance error will be described in detail below with reference to FIG. 13. FIG. 13 is a diagram for explaining a cause of the measured distance error.

Specification page 7, line 27, through page 8, line 2, please replace the paragraph with the following replacement paragraph:

The conventional techniques described above have various problems. In the technique disclosed in Japanese Patent No. 3310079, the measured distance error is not essentially reduced. Further, it is necessary to provide two range finders and a space for the two range finders inside the instrument such as a camera, thereby making the range ~~finder~~ finder not practical.

Specification page 12, line 16, through page 13, line 6, please replace the paragraph with the following replacement paragraph:

According to the present invention, in the range finder, the lens holder may ~~includes~~ include two holes on a bisector perpendicular to a line between centers of the first circular reference hole at a side of the first lens and the second

circular reference hole at a side of the second lens. The optical casing may have two bosses for inserting into the holes. The two bosses of the optical casing are fitted into the holes of the lens holder, so that the optical casing is fixed to the lens holder. The optical casing is fixed to the lens holder at the bisector perpendicular to the line between the first circular reference hole at the side of the first lens hole (reference boss on the first lens) and the second circular reference hole at the side of the second lens hole (reference boss on the second lens). Accordingly, it is possible to balance between the thermal expansion and contraction of the lens holder and the thermal expansion and contraction of the first and second lenses at the optical axes of the first and second lenses. As a result, the optical axes of the first and second lenses equally move in the same direction, thereby reducing the measured distance error caused by the thermal expansion or contraction.

Specification page 15, line 28, through page 16, line 4, please replace the paragraph with the following replacement paragraph:

As shown in FIGS. 1(a) through 1(c), a range finder 1 includes a package 10, leads 20, a semiconductor chip 30, bonding wires 40 for connecting the semiconductor chip 30 to the leads 20, an optical casing 50, a lens holder 60, lenses ~~70~~ 71 and 72, and an adhesive layer 80. The lenses ~~70~~ 71 and 72 are a pair of lenses, i.e. a first lens 71 on the left hand side and a second lens 72 on the right hand side.

Specification page 20, lines 15-23, please replace the paragraph with the following replacement paragraph:

It is necessary to place a plane on which an image is formed (hereinafter referred to as "image formation plane") within a specific range, i.e. a focal depth, ~~base~~ based on characteristics on a lens of a camera for recording an image. As shown in FIG. 3, according to a relation of forming an image through a lens, when a focal point of the lens is f_{ob} , and a ratio (magnification) between a size y of the object and a size y' of the image is $M (= y'/y)$, a distance Z between the object and a front focal point is expressed by equation (11).

Specification page 21, line 26, through page 22, line 3, please replace the paragraph with the following replacement paragraph:

Accordingly, the image formation plane is shifted by 0.0046 mm due to the temperature change. In general, the focal depth, i.e. a tolerance for the position of the plane on which an image is formed by a shooting lens, is $\pm \varepsilon \times F$ for the ideal position of the image formation, wherein ε is a diameter of a tolerable blur circle on the image formation plane, and F is ~~a~~ an F number of the lens. The F number is a value obtained by dividing the focal length f of the lens by a diameter D of the lens.

Specification page 22, line 26, through page 23, line 4, please replace the paragraph with the following replacement paragraph:

Accordingly, the image formation plane is shifted by a mere 4.6 μm relative to the focal depths calculated above due to the temperature change $\Delta 20^\circ\text{C}$. Therefore, the range finder according to the invention is effective for providing a camera for recording an image with distance data to an object. The range

finder is particularly effective for the digital camera, in which a light detecting area, a pixel size, and a focal depth are small.

Specification page 28, lines 1-7, please replace the paragraph with the following replacement paragraph:

As shown in FIGS. 4(a) through 4(c), a range finder 2 includes the package 10, the leads 20, the semiconductor chip 30, the bonding wires 40, the optical casing 50, a lens holder 100, a ~~pair of~~ lenses ~~110~~ 111 and 112, and the adhesive layers 80. The ~~pair of~~ lenses ~~110~~ 111 and 112 are a pair of two separate lenses, namely a first lens 111 on the left hand side and a second lens 112 on the right hand side.

Specification page 31, lines 7-15, please replace the paragraph with the following replacement paragraph:

In the range finder 2, as shown in FIG. 4(a), the optical casing 50 is attached to the lens holder 100 at connected positions, i.e. the bosses 51 and 52 and the circular hole 103 and the long hole 104. Suppose that a distance between the reference boss 116 of the first lens 111 and a line between the connected positions is S_L , and a distance between the reference boss 116 of the second lens 112 and the line is S_R . In the range finder 2, it is arranged that a sum of the distances ($S_L + S_R$) is equal to the reference distance b .

Specification page 31, lines 16-22, please replace the paragraph with the following replacement paragraph:

A mechanism of reducing the measured distance error in the range finder 2 described above will be described next. When heated, the first and second lenses 111 and 112 show the following two behaviors: (1) a behavior due to the thermal change

of the adhesive layers 80, and (2) a behavior due to the thermal expansion and contraction of the first and second lenses 111 and 112.

Specification page 35, lines 18-28, please replace the paragraph with the following replacement paragraph:

In the range finder 2 shown in FIG. 4(a), the distance S_L is different from the distance S_R . In other words, the right portion and the left portion are asymmetrical with respect to the reference line of the optical casing 50 and the lens holder 100. Therefore, there is a difference between the displacement of the semiconductor chip 30 (hereinafter referred to as the "semiconductor chip displacement") due to the temperature change and the change in the distance between the optical axes of the first and second lenses 111 and 112 (hereinafter referred to as the "optical axes displacement") due to the temperature change, thereby causing a small measured distance error.